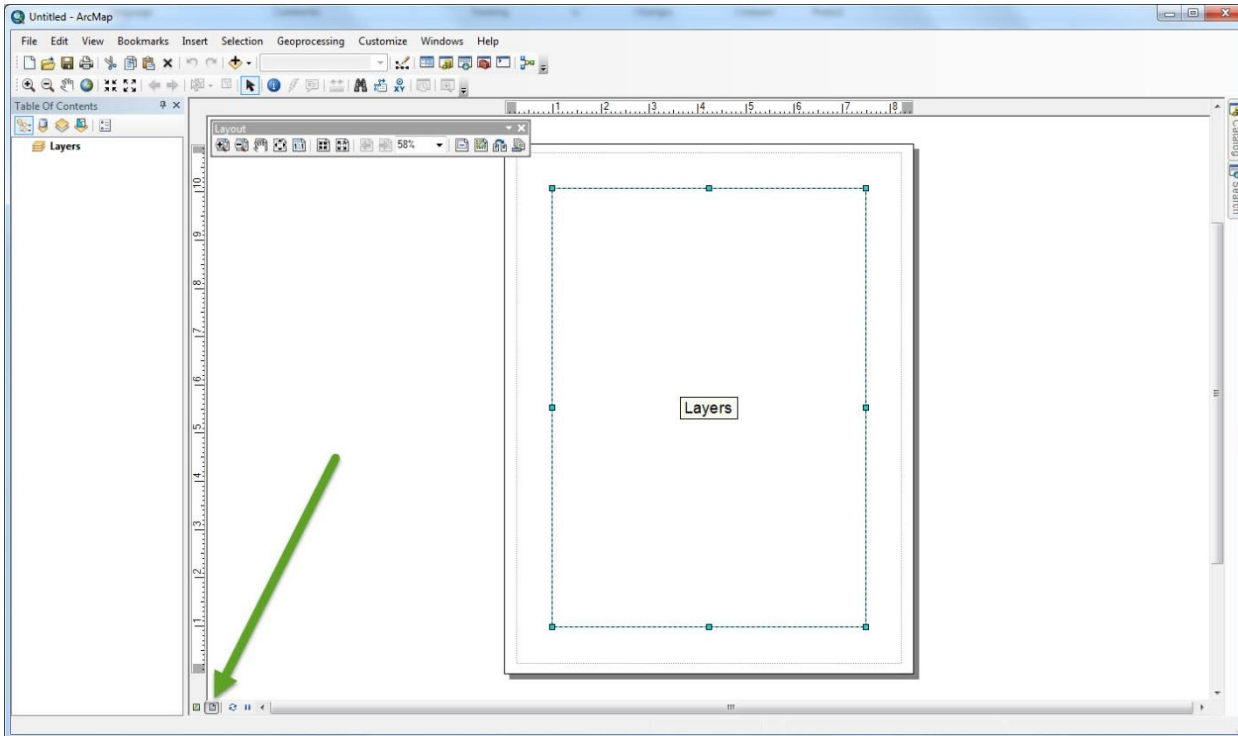


# Creating and Editing Scale Bars and Legends

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## Getting Started

This exercise demonstrates how to create and edit **Scale Bars and Legends** in ArcGIS 10.3.1. It assumes you are in **LAYOUT** view in ArcMap.



For more detailed tips and explanations, go to *ArcGIS 10 Desktop Help – Mapping and visualization > Page layout > Map elements*) [http://help.arcgis.com/en/arcgisdesktop/10.0/help/index.html#/Map\\_elements/00s900000002000000/](http://help.arcgis.com/en/arcgisdesktop/10.0/help/index.html#/Map_elements/00s900000002000000/)

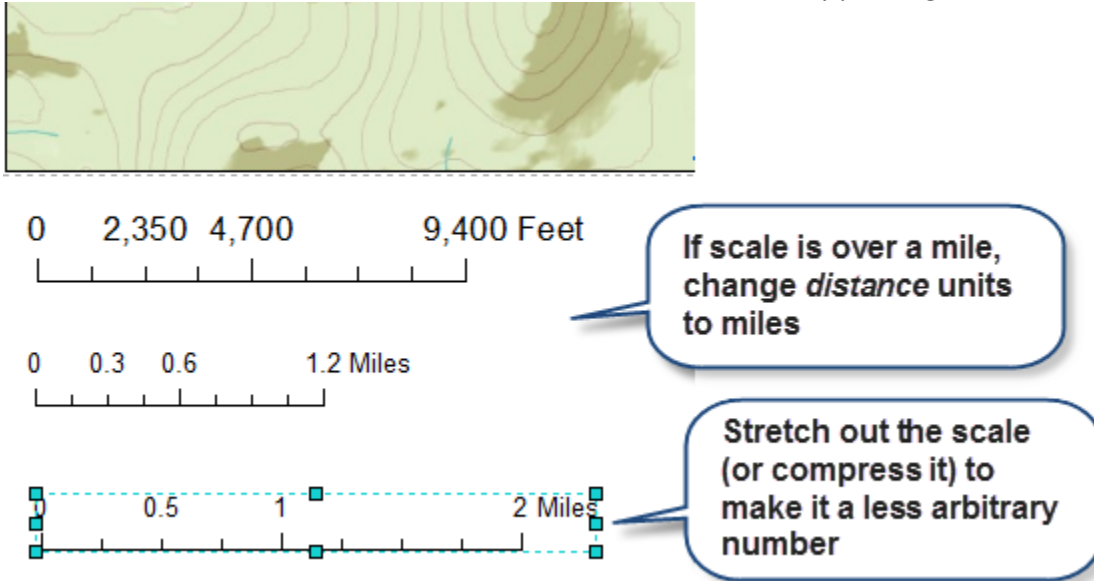
## Working with Scale Bars

### Inserting a Scale Bar – The Basics:

1. Click on the **Insert** menu and choose **Scale Bar**. A window will appear that shows different styles of scale bars.
2. Choose a style on the left side of the menu window.
3. To set the units (e.g., feet, miles) and parameters of the scale bar, click on **Properties** on the right side of the menu window. Set the units under *Division Units*. You can use feet and miles for US data, but if you are mapping international data, use the Metric System!
4. Choose your units and click **OK** to get out of the **Properties** window.
5. Click OK again to insert the scale bar.

## Working with scale bars

You see three scale bars below – the last one is the more aesthetically pleasing and useful. Why?



- The first scale bar above is what ArcGIS gave as the default after we inserted a scale bar and did nothing else.
- The second scale bar reflects the fact that we specified that the distance units be in miles, because for distances over a mile, it is easier to see the unit as miles than feet (same with meters and kilometers).
- The last scale bar is in miles AND it is easy to read. This is much easier to use as a measure on the map because it uses whole numbers and easily understandable divisions of whole numbers. This was done easily by simply stretching out the scale bar manually until it said 2 miles (alternatively we could have compressed it to 1 mile)

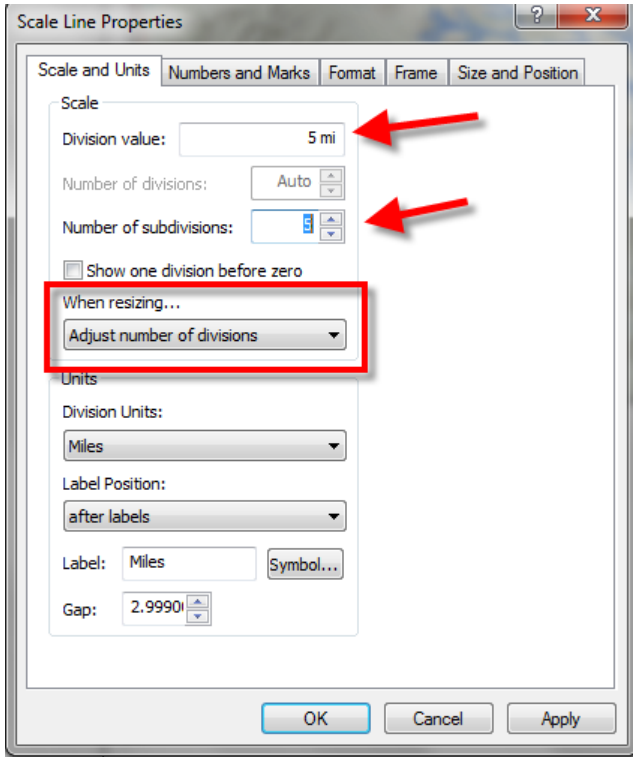
The bottom line is – **NEVER** simply accept the default if it is not easy to read and to use! Take control over your scale bar!

Although specifying the division units and resizing it is the easiest solution, you can also experiment and exert even more control over the scale by going to its *Properties*:

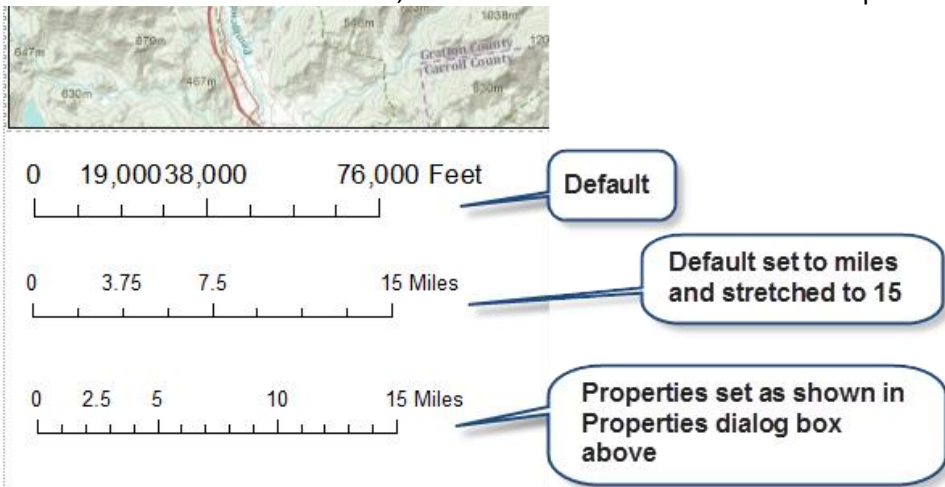
1. Click on the **Select Elements** tool:



2. **Double-click** on the *Scale Bar* in the map to access these *Propertie*.
3. In the following, I'm specifying that I want my main division values to be set at 5 miles, with 5 subdivisions between them (so spaced at 1 mile increments). If I resize this, it will adjust the number of divisions:



Here is the effect on the scale bar, with the two defaults shown as a comparison:



4. You will start to understand the various things you can set in the Properties dialog box by playing with them and seeing the effect on the map. Playing is the best way to learn!
5. Explore the scale bar properties. You can adjust where the labels are displayed, the frequency of the numbers and marks, the font, font size, and font color, and much more. Again, don't just accept the defaults! Customize your map!

## Working with Legends

### Legend Content

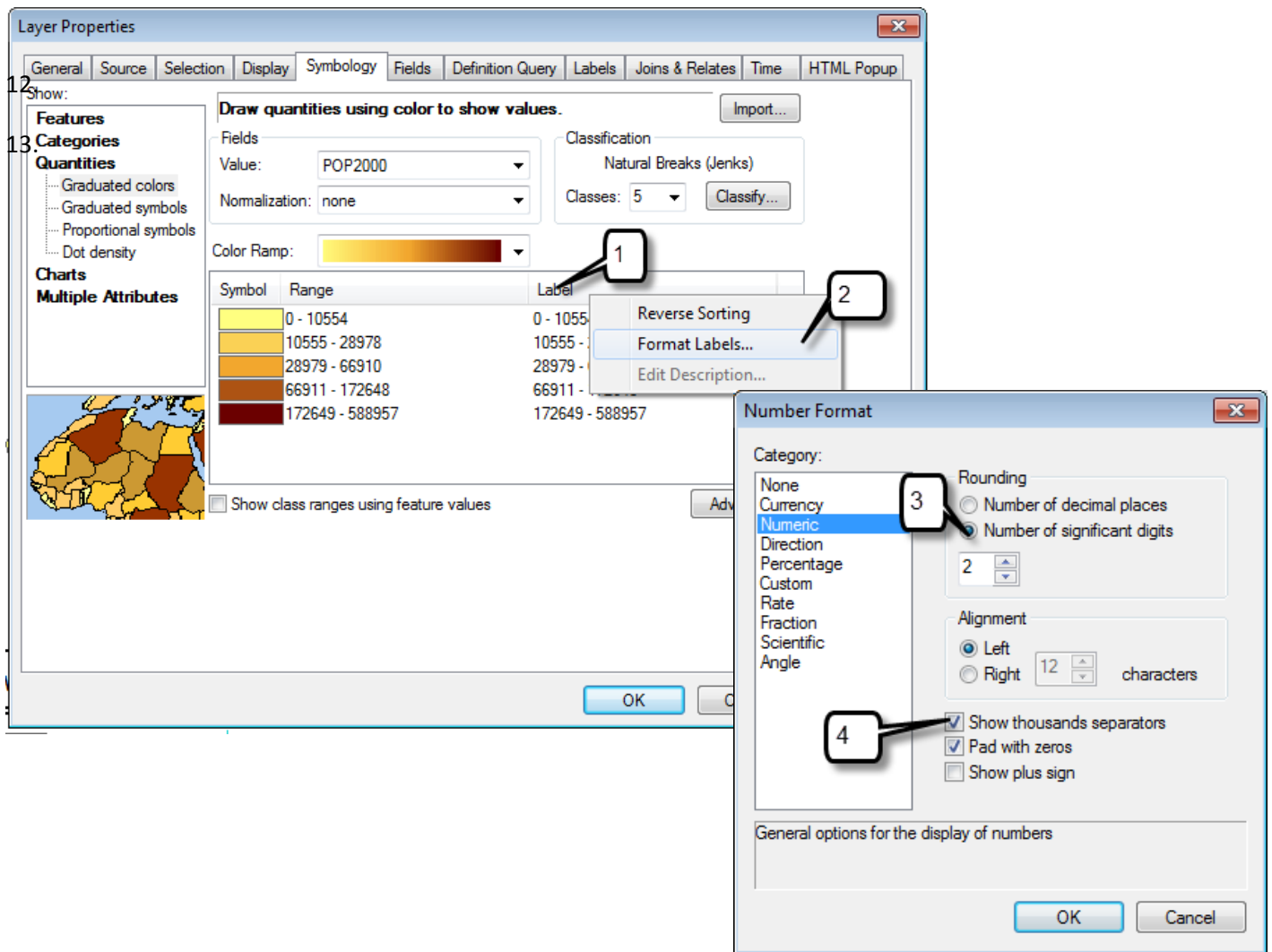
The layer names and the values labels are all determined by what you put in the ArcMap **Table of Contents** for a specific layer. For example:

1. Add the **TOWNS\_POLY** layer found in M:\State\MA\MassGIS\Political\_boundaries\TOWNS\_POLY.shp.
2. Open the properties and go to the Symbology tab. Choose **Quantities** and in the **Value** Field select POP2000. Press okay.
3. Now, let's see what our legend looks like if we were to leave the layer information like this...

### Inserting a Legend


1. Click on the **Insert** menu and choose **Legend**.
2. ArcMap will automatically include the data layers that are turned on in the display menu. Press Next.
3. You can change a number of scale parameters such as background color, outline color and width, font etc., in the different menu windows. *However*, it is usually easiest to accept the defaults and go back and edit after the legend has been inserted. Click **Next** through these windows, then press **Finish**.
4. A Legend will be inserted, but it is not what we want it to look like! The **Name** of the layer does not make sense for the reader, the Layer Heading does not make sense and the numbers are not formatted well!
5. Now, we need to change the name of the layer so that it makes sense in the legend. Highlight **TOWNS\_POLY** and press **F2** to quickly and easily change the **Layer Name**.
6. Change the name of this layer to **Massachusetts Towns**. **Note:** As soon as we changed the layer name in the table of contents, the name ALSO changed in the legend!
7. Now, we need to change the **Layer Heading**. The **Layer Heading** is how the layer is symbolized. Currently, the layer heading says **POP2000**. Someone reading your map would not know what POP2000 means. Let's change it to say **Population 2000**.
8. Highlight the **Layer Heading** and press **F2**. Let's change it to say **Population 2000**. Note, once again the Legend updated to match the Table of Contents.
9. Lastly, the numbers are not easy to comprehend! Let's format the numbers so they are more reader friendly. Double click on **Massachusetts Towns** to open the *Properties*.
10. Click on the **Symbology** tab. Now click on **Label > Format Labels**. Since this is just a raw count, let's keep the category on **Numeric**, but let's change the number of **significant digits to 2**. Also, select **Show thousands separators** to make the numbers easier to read. See figure below. Press. Ok and then Ok.
11. Now, all the numbers are formatted nicely in the **Table of Contents** and in the **Legend!**

**Major Takeaways:** Make sure to give all of your **Layer Names** and **Layer Headings** proper titles in the *Table of Contents*, and format your **layer's numbers** before creating a legend! Once you have your layers properly named and any values properly colored, named, and classified, you are ready to put the legend on the map.



## Manipulating Elements in the Legend

There are a number of ways you can format your legend.

1. To get to the *Legend Properties* use the *Select Elements* tool (  ) to select the Legend on your map layout, then double click on the Legend to open the *Properties*.

### Change what appears in the Legend in the General Tab:

2. Under the **General** tab you can add and delete the layer in your legend by moving items from the *Map Layers* window to the *Legend Items* window.
3. You can also change the order of the items by clicking on an item in the *Legend Items* window and moving it up and down with the black arrows to the right of the window.
4. Below, you can also select whether you want a layer to automatically be added to the map, or if you want the map to automatically reorder if you change the order in the **Table of Contents**.
5. Additionally, you can choose to remove the word "Legend" by unchecking the **Show** button. It is not usually necessary to have the legend say "legend". It is usually pretty clear!

### To change the style of individual layers in the legend:

1. Click on the *Items* tab window.
2. Click on the Item (layer) you want to change and then click the *Style* button. In this window you can choose a specific style for that item. You can see the results as you click on each style option.
3. For even more control, click on the *Properties* window within the *Style* window to change what is shown. You can choose to show the *Layer Name* or *Heading Name* or even the *Label*.

### To change the number of columns in your legend

1. In the *Items* tab, look for the **Items Columns** info.
2. In the box for Columns, put in the number of columns you want. If you want a certain layer to start a new column, click on that item and checkmark *Place in New Column*.
3. If you click on the **Apply** button while you are doing this, you can see the effect on your Legend without exiting the *Legend Properties* window.

### To change the font of your legend in the Items Tab

1. It's good practice to not always accept the defaults. This goes for fonts too!
2. To change the font, highlight all the layers on the left hand column. If only 1 layer is highlighted, the font will only change for that 1 layer.
3. Under *Font*, select the appropriate option. You can choose to change *all labels, the Layer Name, the Heading Name*, etc.
4. Once your layers are highlighted, change the font and size to how you would like it displayed and press *Apply*. You will see it updated in the legend.

See the **Tufts Cartography Tips** tip sheet for more information about working with Legends.

### Changing the Layout of the Legend

1. Under the **Layout Tab**, you can adjust the various gaps in the legend.
2. You can also change the shape of the layer symbol from a default square to an ellipse, diamond, etc. Under **Default Patch**, change the **Area** drop down to do so.

### Changing the Frame Options

1. You can add a border to the legend or a background color in the **Frame Tab**.
2. By increasing the X and Y Gaps, you will increase the margins of the frame.

### Converting the Legend to a Graphic

Once you have created your legend, you can manipulate the items in the legend independently.

*Note:* You should only use this function if the tools in legend properties window are not sufficient. Once you convert your legend to a graphic it is no longer connected to the data, which means the legend will no longer reflect changes you make on your map, e.g. it will not add new layers or reflect changes in colors.

1. *Right Click* on the legend and choose **Convert to Graphics**.
2. *Right Click* on the legend and choose **Ungroup**. You now can move and edit all of the elements of the legend independently.
3. When you are done with your edits, click the mouse and drag a rectangle over all of the elements of your legend to highlight all of them. Right click and choose **Group**.

**Remember: It is often times easier to delete the scale or legend and start over again if you are having problems.**